

A Study of Periodic School Medical Examinations

III. The Remediability of Certain Categories of "Defects"

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When is a defect not a defect? In endeavoring to answer this question the authors point the way to a more efficient and effective employment of personnel in the school health program. But beyond this lie still other implications—specifically the need for a continuous re-thinking of the basic logic of our activities.

✱ The initial impulse leading to the creation of school medical services in the United States developed in the late nineteenth and early twentieth centuries from attempts to control communicable disease among children by early detection and isolation. However, the major impetus to their development as they exist today arose in the second and third decades of the present century as an element in the American child health movement. The overriding objective was the early discovery and correction of "defects." As this period coincided with the popularity of such procedures as tonsillectomy, large numbers of "defects" could be readily "found" by cursory inspection and "corrected" by assembly line surgery.

The concept of early case finding in school and early correction of defects so as to prevent future disability is an appealing one. After World War I the American public, shocked by the proportion of young men rejected for military duty, looked to the newly developing school medical services as a solution to the situation. When Selective Service

statistics during World War II again disclosed a high proportion of rejectees an accusing finger was pointed at the school health services. One review of school records disclosed that a high proportion of some of the reasons for rejection had been recognized in the elementary school.¹ The school medical services were taxed with placing too much emphasis on finding defects and not enough on correcting them. Legislation was introduced into Congress providing for a comprehensive program of treatment for school-discovered defects.² A few voices protested that most of the rejections were for educational and mental deficiency, psychiatric disability, dental and eye defects, or other conditions for whose continued existence the school medical services could hardly be held responsible.³ Yet even today such protestations are often unheeded. Draft rejection statistics are still quoted as support for new programs or appropriations.⁴ Furthermore, many school health service reports continue to list the number of "defects found" and "defects corrected." Even when "correction is defined as "a note from a private physi-

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cian," the implication that correction and medical care are synonymous is hard to escape. In point of fact, the criticism that periodic school medical examinations keep finding the same old "defects" year after year may arise as much from the inherent nature of the "defects found" as from failure of follow-up activities.

In previous communications we have questioned the case-finding value of periodic school medical examinations during the first four elementary school grades.^{5, 6} We have described the annual incidence of new "defects" and pointed out that by the time an examination is performed the vast majority of conditions are already under care or known to the school or inherently capable of discovery by some method other than a complete medical examination. In this report attention will be focused on the nature of the adverse conditions or "defects" found among elementary school children, their response to medical care, the degree to which they are handicapping, their inherent remediability, and the relationship of these characteristics to the periodic school medical examination.

The data presented below are based upon careful pediatric appraisals of a 15 per cent sample of Rochester, N. Y., school children who were first-grade pupils in the school year 1952-1953 and who were examined annually for the next four years by one of us (R.A.L.). Although 901 children were followed, the data presented in this report will be restricted to 617 children who were examined each year for four years. The socioeconomic status and the health status in the first grade of the remaining 284 children (who missed one or more of the annual examinations) do not differ significantly from the group followed annually. Acute infections, minor skin conditions, dental conditions, refractive errors, and hearing loss have been excluded from con-

sideration because their detection does not require the professional time and skill of a physician. This point is of particular importance in considering the remediability of adverse conditions. The findings and conclusions drawn from our data are not relevant to dental, hearing conservation, or sight-screening programs in schools.

Results

At the first-grade examination 163 adverse conditions were found among the 617 children who are the subject of this report. All 617 children were carefully examined annually for the next three years. During these contacts it was neither possible nor desirable to separate counseling services from appraisal services. Thus, in addition to whatever counseling and follow-up services were given to parents generally through the school health program of the Rochester Health Bureau, the parents in this study group received special attention. In the case of children with adverse conditions the nature of the condition and the need for medical care were carefully explained to the parent by the pediatrician and public health nurse each year; often special arrangements were made to help the parent secure care beyond what could be expected from the usual school medical service.

As portrayed in Table 1, almost two-thirds of the adverse conditions noted in the first grade were still present when the same children were examined in the fourth grade. In every diagnostic category, except ear, nose, and throat and emotional conditions, more of the original conditions were still present than had been corrected.

Conceivably "correction" might have been related to socioeconomic status, but when schools were grouped to reflect socioeconomic status, as described elsewhere,⁵ this hypothesis was not borne

Table 1—Status of Adverse Conditions Noted in First Grade on 617 Rochester School Children When Examined Three Years Later, by Diagnostic Category

Diagnostic Category	Present in First Grade	Status in Fourth Grade	
		Not Present	Present
Orthopedic	32	3	29
Allergic	27	8	19
Emotional	25	18	7
Ear, nose, and throat	22	14	8
Nutritional	18	7	11
Genitourinary	14	6	8
Cardiac	5	1	4
Neurologic	6	0	6
Other	14	7	7
Total conditions	163	64	99

out. As shown in Table 2 children in the least favored schools (Group III) had the largest proportion of "corrections." This difference between the school groups (although not significant statistically) is probably related to the low incidence of orthopedic conditions noted initially in Group III children.⁵

As we have previously pointed out,⁶ 14 per cent of the children followed developed one or more new adverse conditions during the three-year, follow-up period. In this group of 617 children 118 new adverse conditions developed; 101 of these were still present at the

fourth-grade examination. Thus, the 64 adverse conditions which had been "corrected" during these three years were outnumbered by the new ones that appeared. Two hundred conditions (32.5 per 100 children) were present in the fourth grade as compared to 163 (26.4 per 100 children) in the first grade.

To scrutinize the characteristics and status of care of the adverse conditions present at the fourth-grade examination more carefully, 31 conditions first discovered at this examination have been excluded from consideration. Thus there remain 157 children with 169 ad-

Table 2—Status of Adverse Conditions Noted in First Grade on 617 Rochester School Children When Examined Three Years Later, by Socioeconomic Group

Socioeconomic Group *	Present in First Grade	Status in Fourth Grade †	
		Not Present	Present
I	58	22	36
II	54	17	37
III	51	25	26
Total conditions	163	64	99

* Group I has highest and Group III lowest socioeconomic status.

† $\chi^2 P = 0.17$.

Table 3—Adverse Conditions Present Among 617 Rochester School Children for One or More Years, by Diagnostic Category and Status of Medical Care

Diagnostic Category	Status of Medical Care		Total
	Under Care	Not Under Care	
Orthopedic	30	9	39
Allergic	32	0	32
Emotional	10	14	24
Ear, nose, and throat	5	7	12
Nutritional	14	3	7
Genitourinary	13	3	16
Cardiac	8	1	9
Neurologic	6	0	6
Other	14	0	14
Total conditions	132	37	169

verse conditions which had been noted as present for one or more years prior to the fourth-grade examination. In every case the nature of the condition had been discussed individually with the parent and in almost two-thirds of the cases this had been done for three consecutive years.

Table 3 portrays the diagnostic categories of these 169 conditions and their medical care status at the fourth-grade examination. Almost four-fifths of these conditions were under care. In only two categories, "emotional," and "ear,

nose, throat," did the number of children not receiving care exceed those under care. It will be recalled that these two categories were also the only ones which had responded significantly to medical care between the first and fourth grades (Table 1). In addition, they accounted for the largest increment of children with "new" defects noted after the first grade.⁶ Thus their predominance in this tabulation as conditions not under care may be a reflection of the relative recency of their onset.

Although evaluation of the follow-up

Table 4—Status of Medical Care of Adverse Conditions Present Among 617 Rochester School Children for One or More Years, by Socioeconomic Group

Status of Medical Care	Socioeconomic Group *			Total
	I	II	III	
Under care	52	44	36	132 †
Not under care	10	12	15	37 †
Care sought but not rendered	(0)	(2)	(3)	(5)
Care not sought	(9)	(9)	(12)	(29)
Not classifiable	(1)	(1)	(0)	(2)
Total	62	56	51	169

* Group I has highest and Group III lowest socioeconomic status.

† $\chi^2 P = 0.16$.

process was not the primary purpose of this study, some effort was made at each interview to account for the reason why a condition brought to parental attention one or more years previously was not currently under medical care. Conceivably socioeconomic status of the family could be related to status of care. Table 4 is an analysis of some of the factors bearing on this problem. While a direct relationship appears to exist between socioeconomic status and the proportion of conditions under medical care, the differences are not great (84 per cent in Group I vs. 71 per cent in Group III), and X^2 for the total distribution is not significant ($P = 0.16$).

Failure of the parent to take action accounted for the majority of the conditions not currently receiving care. This factor was not further explored in detail, but it is worth noting that 14 of the 29 conditions so classified were emotional disorders.

In five instances the parent had consulted a physician because of the underlying condition but had been assured that the child needed no care. Two striking examples of this type of case are worth describing. The first is a girl with a history of recurrent febrile episodes, accompanied by abdominal pain and occasional dysuria, who had twice been catheterized in the emergency room of a hospital. The right kidney was palpably enlarged on examination. As a result of referral by the school medical service the child received a urological work-up and was diagnosed as having hydronephrosis and ptosis of the right kidney with ureteral stricture and secondary infection. Operation was advised by the urologist, but the family physician advised against operation and suggested no treatment other than a possible adenotonsillectomy.

The second example is a boy with severe, progressive funnel chest associated with growth failure, repeated respiratory infections, cardiac shift, en-

largement and murmur, and evident clubbing of the fingers. As a result of referral from the school medical service operation was advised and the boy sent to a summer camp in preparation for surgery. At camp he gained a few pounds, his hemoglobin rose a few points, and his family physician advised against surgery. The sequel to this story is somewhat happier in that after the fourth-grade examination the mother was strongly urged to return to the chest surgeon. She did so, operation was performed, and dramatic improvement resulted. This condition was not under care at the time of the fourth-grade examination, however, and therefore it is treated in our data as not under care.

Diagnostic categories alone are an inadequate expression of the nature of the problems presented by these children. For this reason an attempt was made to classify each adverse condition in terms of its potential remediability, assuming that ideal and complete medical care was readily available. In this classification most emotional and nutritional disorders and ENT conditions were considered completely remediable, whereas orthopedic and allergic conditions, based on an assessment of the individual diagnosis were largely classified as "somewhat" or "slightly" remediable. In assigning degree of remediability a deliberate attempt was made to scale judgments so that an approximately equal number of conditions would be assigned to each category.

An attempt was also made to estimate the degree of handicap for each condition. This estimate was based on a judgment of the effect or potential effect of the condition itself on the child's school achievement and absenteeism, physical activity and appearance, and social adjustment. These judgments of severity of handicap and degree of remediability are admittedly subjective. They are presented, however, as a summation of opinion in an attempt to

Table 5—Severity and Remediability of Adverse Conditions Present Among 617 Rochester School Children for One or More Years by Status of Medical Care

Severity of Handicap	Degree of Remediability *	Status of Medical Care		Total
		Under Care	Not Under Care	
Severe	Completely	1	0	1
	Somewhat	0	1	1
	Slightly or not at all	13	0	13
	Total	14	1	15
Moderate	Completely	11	8	19
	Somewhat	7	3	10
	Slightly or not at all	29	10	39
	Total	47	21	68
Slight or none	Completely	22	8	30
	Somewhat	46	6	52
	Slightly or not at all	3	1	4
	Total	71	15	86
Total	Completely	34	16	50
	Somewhat	53	10	63
	Slightly or not at all	45	11	56
	Total	132	37	169

* Assuming that ideal care were fully available to all.

round out the picture of adverse conditions among school children as it appeared to us.

An analysis of these 169 conditions by severity of handicap and degree of remediability is presented in Table 5 which also relates these factors to status of medical care. It will be noted that over half the conditions were considered to be only slightly handicapping. For all practical purposes children with these conditions could function as well as children who had no adverse condition. Mild, static, structural abnormalities of posture and feet, or mild attacks of allergic rhinitis which did not interfere with school attendance or function are examples of conditions so classified. Only 9 per cent of the adverse conditions were considered severe and only one severe condition (among the 617 chil-

dren followed) was not under medical care. This was the case of the boy with the funnel chest, mentioned previously, where care actually was sought by the parent but advised against by the family physician.

Less than one-third of the adverse conditions were considered completely remediable even with ideal care. Only one of the severely handicapping conditions was considered completely remediable. This was another case of funnel chest, this one in a girl whose older brother had had the same condition and was operated upon with complete recovery. This girl's funnel chest is becoming more marked, and she has had repeated bouts of pneumonitis but no other complications. She is scheduled for operation in the near future and should have a complete recovery.

Although both degree of remediability and severity of handicap might have been expected to influence status of care, this hypothesis was not borne out by the data except when the handicap was severe. There are proportionately fewer completely remediable conditions under care than conditions partially or slightly remediable, and there are proportionately fewer moderately handicapping conditions under care than conditions only slightly handicapping. This apparent paradox is related to the diagnostic categories of the 16 conditions classified as completely remediable yet not under care, most of which were emotional disorders.

As factors in the motivation to seek medical care, degree of remediability and degree of handicap work against each other. Severe handicaps are unlikely to be correctable while slight handicaps are likely to be completely at least partly correctable.

In general it would appear that medical care is sought when a handicap is severe enough, but that when it is moderate or slight the nature of the diagnosis is the most important factor affecting the decision of the parent.

Discussion

Before discussing the implications of this descriptive analysis of adverse conditions among elementary school children, it should be pointed out again that dental, hearing, and vision defects have been excluded from consideration. Our findings, for example, cannot be compared with those of Hardy who was dealing with the outcomes of school screening programs for vision and hearing.⁷ A majority of the other adverse conditions found among elementary school children appear by their very nature to be "irremediable" and will be "rediscovered" if looked for year after year. A high proportion are only slightly handicapping so that school

health statistics which treat them indiscriminately must be interpreted with caution. Most conditions present for some time in the group followed were receiving medical care. Those that were not were in large measure either emotional disorders (where blocks to parental motivation to seek care were compounded by the shortage and expense of treatment resources) or minor handicaps of no great significance.

An approach to adverse conditions among school children in terms of remediability and severity of handicap was first suggested in 1949 by a special committee appointed by the Federal Security Agency.⁸ The committee did not separate the two categories of remediability and degree of handicap but assigned numerical weights to some of their specific criteria. In addition, weights were assigned to a number of other criteria such as "progressive," "danger to others," "available facilities," and so forth. They suggested that each disease be scored by summing the products of the weights given to specific criteria and a factor representing the score of each condition (as it pertained to each criterion). We believe our approach is somewhat simpler than this and that there are certain advantages to separating degree of handicap and degree of remediability which are lost if the two are combined into one weighted score. Regardless of the method used, this approach appears to be entirely practical. It adds a new and valuable dimension to the picture of adverse conditions among children of school age. As suggested by the committee, each community should score (or classify) adverse conditions to suit its own needs and situation. No one would deny that children with adverse conditions differ widely, some deserving and needing much more attention than others. There is no reason why this obvious fact cannot be expressed statistically.

In previous reports the role of the school physician as a routine examiner of elementary school children has been decried because the case-finding values of this service appeared to be minimal or nonexistent.^{5, 6} The data presented in this report point up a more positive role which a school physician can play. Among the 617 children followed for three years were 12 (about one child in 50) whose severely or moderately handicapping adverse condition was completely or partially remediable yet not receiving care. School medical resources directed toward motivating parents to seek care or even toward its actual provision, when community resources need such supplementation, would seem highly desirable.

Among these 617 children were 76 (about one child in eight) with 83 conditions moderately to severely handicapping. Most of these children were under medical care, but school medical resources directed toward providing the teachers of these children with some understanding of the nature of their handicaps and needs would also seem desirable. Too often these considerations are left entirely to the public health nurse. Not infrequently they require a degree of medical understanding and a type of doctor-to-doctor exchange with private physicians which ask too much of even the most capable nurse.

In brief, concentration of attention and effort to meet the needs of selected children who can be screened from the larger group by means other than a periodic physical examination would appear to be a more constructive role for school medical personnel in elementary schools than a more general diffusion of their efforts.

Summary

An analysis of the "correction" and persistence of adverse conditions among 617 children followed with complete an-

nual medical examinations during the first four years of elementary school has been presented. Almost two-thirds of the conditions present in the first grade were still present in the fourth grade. The increment of new adverse conditions between the first and fourth grade exceeded the number corrected so that relatively more adverse conditions were present at the end of the follow-up period than at its beginning.

One hundred and sixty-nine adverse conditions present for one or more years and thoroughly discussed with and explained to parents are analyzed in somewhat more detail. Four-fifths of these conditions were under medical care at the time of examination in the fourth grade. Parental failure to seek care accounted for most of the conditions not under care. A high proportion of uncared for conditions were emotional disorders.

These 169 adverse conditions were classified in terms of degree of remediability and severity of handicap. Over half of these were considered to be only slightly or insignificantly handicapping and less than one-third were considered to be completely remediable. Thus it is to be expected that many of the "defects" found among school children will persist in spite of treatment. Parents were more apt to seek medical care for severely handicapping conditions and for conditions with a predominantly somatic rather than psychic basis.

In this group of 617 children about one child in eight had a moderately to severely handicapping condition. It is suggested that school medical personnel could profitably concentrate attention upon this group, interpreting their needs to school staff and assisting the small proportion of them not under medical care to obtain such care.

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In honor of the late Alan Gregg, M.D., the National Health Council has established "The Alan Gregg Fund." Contributions to the Fund will be used to support the Health Careers program, particularly the newly created Commission on Health Careers. The chairman of the Commission is Leonard A. Scheele, M.D., former Surgeon General of the Public Health Service.

Dr. Gregg, as a member of the 1954 National Health Forum, suggested that guidance people from high schools and colleges be brought into the Forum on "Staffing America's Health Services." Out of this grew the Health Careers Project, which brings to young people of the nation new opportunities to explore careers in the whole gamut of health and medical careers. Dr. Gregg over the years was interested in the varied activities of the National Health Council and especially in its reorganization after World War II.

The initiating committee for the Alan Gregg Fund is made up of 21 persons representing various areas of community life, chiefly public health. It includes besides Dr. Scheele, the current and immediate past president and president-elect of the National Health Council. Two-thirds of the committee are members or Fellows of the American Public Health Association.

Contributions may be sent to the Alan Gregg Fund, National Health Council, 1790 Broadway, New York 19.